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Electronic Liveworksheet- Based LKS Teaching Materials for Middle School Science Learning

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A B S T R A C T

This study aims to analyze the needs of electronic student worksheets (LKPD) in junior high school (SMP) science learning. The population in this study was all eighth-grade students, totaling 30 people. The research was conducted using a qualitative-descriptive research approach by conducting an analysis at SMPIT Bina Ilmi. The results of the needs analysis of the use of liveworksheet-based LKPD in science subjects are as follows: 53.70% of students have difficulty understanding the digestive system material in science subjects in class VIII SMP. A live worksheet is one of the variations of teaching materials or learning media that can be used in the classroom. Based on the results of this needs analysis, the author's suggestion is that, based on the results of the analysis of students' needs for LKPD, E-LKPD is needed to increase students' interest in the learning process.

1. Introduction

Currently, Natural Sciences offers diverse alternative learning models that can enhance students' knowledge and skills. Learning entails an interactive process between learners and educators or learning resources in schools or other settings within the learning environment. The fundamental factors for optimal learning are the desire to learn and the aptitude for learning. Wanting to learn means that students have the desire or motivation within themselves to acquire knowledge, and being able to learn means that students can effectively engage in the learning process. The success of learning largely depends on the quality of interaction between students and educators or learning resources. Learning is considered the most crucial activity throughout the entire educational journey.

In traditional learning, the teacher plays a central role (teacher-centered), with students acting solely as receivers of information. This approach restricts students from exploring their full potential and hinders the application of Higher Order

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Thinking Skills (HOTS) in natural science subjects. In accordance with the learning process outlined in the 2013 curriculum, scientific inquiry relies not only on theoretical abilities, but also on the systematic acquisition of knowledge from concrete experiences.

Risdyanti (2019) explained that science learning in implementing the 2013 curriculum does not just introduce concepts to students but also improves skills in the learning process so that it can increase students' sense of understanding and competence by giving students direct experience related to learning activities. thus making learning more meaningful. Reflectively, a process of active observation, conceptualization, and experimentation was carried out. All paths follow a cycle that must be repeated so that learning becomes more interesting, meaningful, concrete, and not only focused on the teacher. Educational institutions are encouraged to continue developing effective digital media to support learning activities (Hanum, 2023).

So that all the demands and hopes of 21st century education can be achieved, learning must be carried out through innovative approaches, strategies, models, and teaching materials that are different from conventional learning, as stated by Atep (2020). One innovation in the field of education is the existence of digital books, or electronic books, which are a more practical form of book because they can be used using equipment such as a laptop, personal computer, or smartphone, as stated by Francisca (2022). One form of teaching technology that can actively encourage and build students' conceptual understanding during the learning process is Student Worksheets (LKPD), Prabowo (2015).

LKPD, or printed teaching materials consisting of sheets of paper with material, summaries, and instructions for learning tasks, have been described by Prastowo (2015). Sari (2018) contends that LKPD can help enhance students' higher-level thinking skills and boost their social interaction. With technological advances, LKPD is now transitioning to a digital format that can be accessed via a computer, mobile phone, or smartphone. However, the challenge lies in the unavailability of an affordable and accessible LKPD that conforms to the standards of the wider community (Andikaningrum, 2014).

The growing number of students possessing mobile devices creates an opportunity for an alternative medium that can enhance their mastery of lesson material. The integration of multimedia features into the LKPD is expected to increase its value and stimulate students' interest in learning. In a preliminary study on E-LKPD, students reported that their science teacher did not utilize LKPD as a teaching material to aid their understanding of Digestive System course content, which was corroborated by the science teacher. Language is an important tool to express and communicate with the others. Language is a tool that use for communicate ideas, opinions and also he passion through oral or spoken means between some people (Sari, 2023).

The teacher reported that the assignments provided to students for studying the digestive system were suboptimal. Therefore, both teachers and students were

interested in obtaining LKPD that could enhance students' comprehension of the subject. Several previous research studies have shown that problem-based learning LKPD in biology is both effective and practical. Examples of such studies include Fitriasari et al., Hali et al., and Pratiwi et al. (2021). Novianti (2014) also developed a problem-based learning LKP on the human digestive system, resulting in a highly feasible LKPD. Farman (2021) further emphasizes that LKPD has undergone technological innovation and is now known as E-LKPD.

Kurniawati (2021) defines E-LKPD as an application in the form of student worksheets, accessible through laptops, cellphones, and computers, providing anytime and anywhere access. Pratiwi (2021) revealed that E-LKPD, using interactive digital forms, is more effective and efficient in student learning. E-LKPD has been selected as a diverse teaching material in online learning implementation. In accordance with Apriliyani's (2021) assertion that E-LKPD is a useful and attractive electronic teaching material, it should be noted that this student worksheet takes the form of an electronic document. It serves as a valuable resource for educators, providing practical exercises to help students with their studies. Additionally, E-LKPD is an innovative way to engage students and make learning more interactive.

Learning activities are designed to provide learning experiences that involve mental and physical processes through interaction in order to achieve basic competencies (Bella, 2023). Online learning is a learning system that is influenced by the rapid development of technology, so of course it will influence learning planning. In a short time, this technology has been widely used to facilitate learning and create E-LKPD teaching materials, one of which is Liveworksheet. As stated in the liveworksheet website, a liveworksheet is an application that is connected to the internet, changing the form of a portable document format, a joint photographic expert group, or a conventional worksheet in the form of a printed document into an electronic worksheet.

E-LKPD is interactive, and we can also insert images, audio, and video according to the design we want. Online learning is a learning activity that is assisted by an internet network with accessibility, connectivity, flexibility, and the ability to generate learning interactions. Sadikin, (2020). In line with Deviana's (2021) explanation, learning outcomes can be said to be students' mastery of the results of learning activities that have been carried out by carrying out evaluations, which are used as a means of improving the learning process as a benchmark for student abilities.

According to Widiyanti (2021), E-LKPD can be used by educators in their learning process as optional or alternative teaching materials. This is because it is more economical not to use paper, and there are many forms of practice such as descriptions, multiple choice, matching, videos, animations, and images that can be embedded. Teaching materials in the form of images are a means of conveying messages in the form of subject matter that is applied in the form of visual communication symbols, namely two-dimensional images that can be created and

designed by education so that they can adapt to the environment. learning materials implemented (Elpis, 2017). In this way, students are interested and do not get bored with learning.

One of the subjects discussed in class VIII is the digestive system. Learning videos are one way to create a learning atmosphere that makes students interested when the material is presented by the teacher so that it can help improve student learning outcomes. Learning video songs makes learning less boring because of the variety of activities, as reported by Kurniawan (2018). The main material used by researchers in basic competence (KD) 3.5 Analyzing the digestive system in humans and understanding disorders related to the digestive system, as well as efforts to maintain the health of the digestive system and 4.5. presents the results of research on mechanical and chemical digestion. KD is the application of concepts derived from KD, so students have difficulty understanding and lack understanding when carrying out practical work in experiments. With this E-LKPD, there are clear work instructions and practice questions to stimulate creativity. Students become more creative and independent.

Apart from that, the characteristic of E-LKPD with an attractive design display containing videos, images, and colors and being multimedia is expected to make students motivated and enthusiastic about carrying out learning activities, which have implications for improving learning outcomes and science process skills. The teaching materials used by researchers using E-LKPD will help the science learning process in the classroom so that it is more valid, practical, and effective. Safitri (2022) further stated that students' KPS increased after being used in E-LKPD so that it could be used as a solution in choosing the delivery of subject matter in science learning during the pandemic.

Based on this description, it is very important and necessary to immediately carry out research aimed at analyzing the need for E-LKPD in junior high school science learning in order to facilitate students having higher-level thinking abilities and science process skills and increase social interaction.

2. Methodology

The research was carried out using a qualitative descriptive research approach by compiling an analysis at SMP for Science E-LKPD, which can facilitate students to have high-level thinking abilities, science process skills, and the development of social interactions. This research aims to analyze the need for E-LKPD in junior high school science learning. This research will be carried out at SMPIT Bina Ilmi Lemabang Palembang. The population in this study was all Class VIII students, totaling 30 people. The data collection technique in this research is through observation, interviews, and questionnaires so that respondents can fill out the questionnaire offline in class.

Observations in this research were carried out to see the implementation of learning, media, and teaching materials used by teachers during learning in class.

Interviews were conducted with teachers to find out the types of teaching materials used, methods, learning media, and difficulties experienced by students during the learning process. The questionnaire contains questions to measure students' interest in the material, difficulties, and open materials needed by students.

3. Results and Discussion

Based on the results of interviews conducted, researchers show that educators at this school still often use conventional learning media and methods such as lectures in their learning process. as well as PPT (Power Point), but have never created and used E-LKPD, so learning activities so far seen watching are less interesting and less innovative.

Another problem is that students have difficulty understanding the learning and feel easily bored while taking part in the learning. As evidenced by the list of semester exam scores, there are still many students who do not meet the minimum completeness criteria (KKM). The following is a list of semester exam scores for students in the SMPIT Bina Ilmi Lemabang Palembang class.

Based on the table 1, it can be seen that of the 30 students in the class, 18 (60%) did not meet the KKM, while 12 (40%) students met the KKM. Meanwhile, the highest score for students is 85, and the lowest score is 55. Therefore, to minimize deficiencies in the digestive system material in class, which results in low student learning outcomes, it is necessary to evaluate and innovate by introducing the use of open material for the latest and most effective student worksheets.

Table 1. List of Semester Exam Scores

Class	**The number of students**	**Mark**			
		<75	**≥75**	**Lowest**	**Highest**
VIII	30 students	18 Students (60 %)	12 Students (40 %)	55	85

Source : List of Semester Exam Scores for Class VIII Students at SMPIT Bina Ilmi Lemabang Palembang

Learning using E-LKPD is a solution and is very much needed to improve the science learning outcomes of class VIII students at SMPIT Bina Ilmi. Based on the explanation above, the aim of this research is to conduct a needs analysis of the use of liveworksheet-based E-LKPD. The following are the results of the needs analysis obtained by filling out a questionnaire, with the number of respondents being 30 students. Respondent identity indicators are asked at the beginning of the needs analysis to briefly determine the respondent's identity. Apart from conducting interviews with educators, researchers also distributed questionnaires in the form of questions related to students' needs in efforts to improve learning outcomes in digestive system material in class VIII SMPIT Bina Ilmi Lemabang Palembang. The following are the results of the needs analysis of the use of live worksheet-based E-LKPD in science subjects (Figure 1).

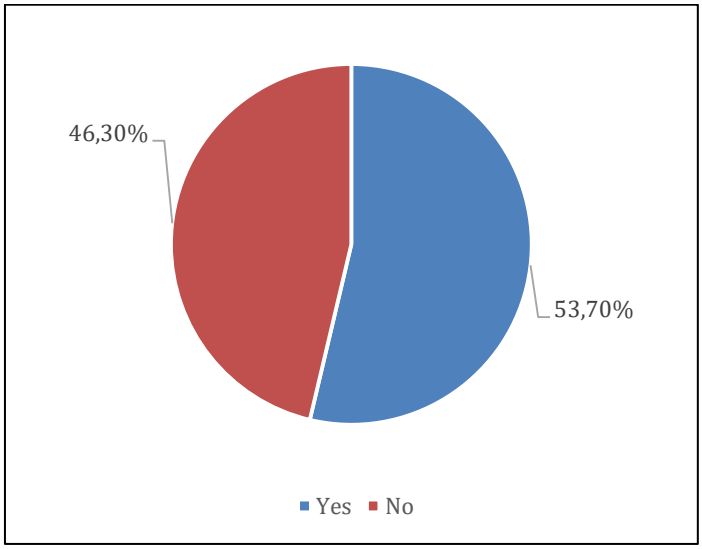

Figure 1. Students' Difficulty Level in Understanding Digestive System Material in Class VIII SMP

After observations based on the data in Figure 1, the results of the student percentage, namely 53.70%, stated that students experienced more difficulty understanding the digestive system material in Class VIII Science of Middle School (Figure 2).

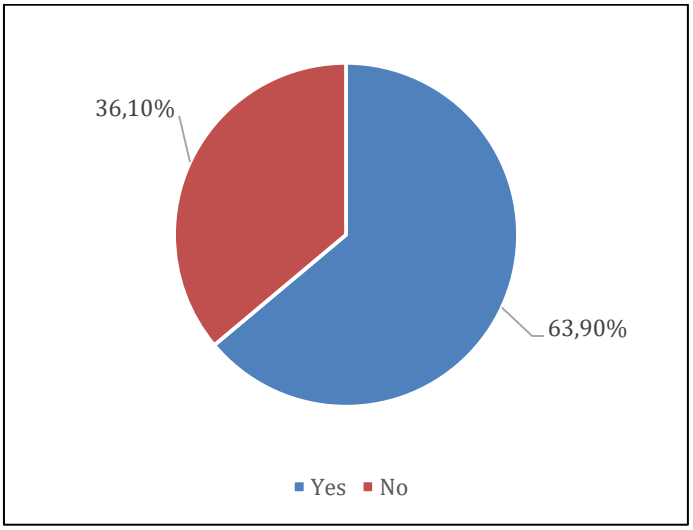

Figure 2. Reasons why Students Find it Difficult to Understand the Digestive System Material in Science Class VIII Middle School

It is known that, based on data from Figure 2, 63.90% of students have difficulties understanding the digestive system material in Class VIII SMP science. This is largely caused by the limited availability of interesting teaching materials, so educators know the need for interesting teaching materials for students on digestive system material (Figure 3).

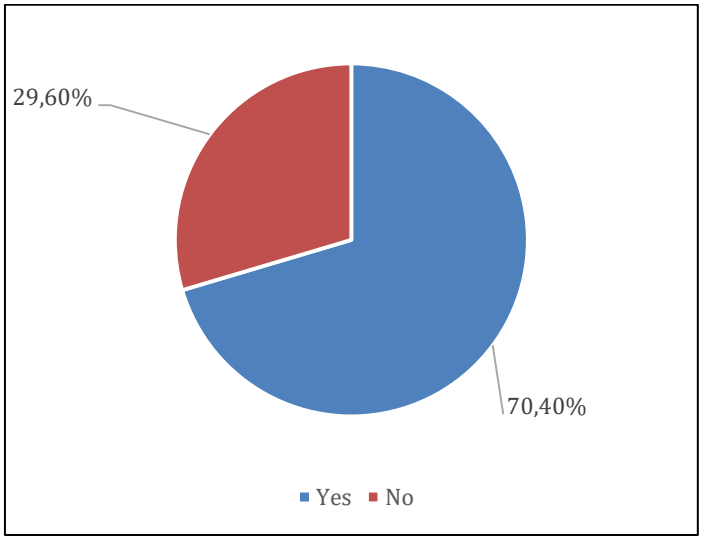

Figure 3. Students' Needs for Interesting Teaching Materials in Understanding Digestive System Material in Class VIII SMP Science

After observations based on the data in Figure 3, the percentage result of 70.40% states that students need interesting teaching materials to understand the digestive system material in Class VIII Middle School Science, so liveworksheet-based E-LKPD teaching materials are needed on the digestive system material. The process of interviews and distribution of questions have been done, as shown in figures 4 and 5.

Figure 4. Interview with Class VIII Science Middle School Students

Figure 5. Class VIII Science Middle School Student Questionnaire

4. Conclusion

Based on the research results above, it can be concluded that 53.70% of student experience difficulties in understanding the digestive system material in Class VIII Science in Middle School. The reason is that the number of students at 63.90% is mostly due to the limited availability of interesting teaching materials, so that educators know the needs of students and can create and prepare interesting teaching materials for students on the subject of the digestive system. Furthermore, based on the distribution of a needs analysis questionnaire related to the E-LKPD teaching materials that will be developed, students with a percentage of 70.40% require teaching materials in the form of electronic student worksheets containing images, text, video, audio, or sound, as well as practice questions on class VIII digestive system material in the form of liveworksheet-based E-LKPD. Live worksheet-based E LKPD that is in accordance with this needs analysis can be an alternative medium that can be used by educators in carrying out interesting and interactive learning activities so that it has an impact on improving student learning outcomes and can make students motivated and enthusiastic in carrying out the learning activities that will be carried out and have implications for improving learning outcomes and science process skills.

Based on the conclusions above, the suggestions given by the author are the results of the analysis of the needs for liveworksheet-based electronic student worksheets, which are one variation of teaching materials or learning media that can be used in the classroom. However, it is necessary to adapt to the characteristics and conditions of each class. Liveworksheet-based e-LKPD can also be developed for other subjects so that students are more active and motivated in their learning. This also relates to supporting applications in creating electronic student worksheets, because currently there are many other supporting applications that can be useful for educators in creating E-LKPD.

References

Agustin, DY, Setyosari , P., & Suharti , S. (2020). Development of Digital Thematic Teaching Materials for Class V Elementary School Students. *Journal of Education: Theory, Research, and Development* , *5* (12), 1793-1799.

Andikaningrum, L., Damayanti, W., & Dewi, C. (2014). Effectiveness of Multimedia-Based E-Books Using Flip Book Maker as a Learning Media in Increasing Student Learning Activeness (Case Study on Class XI ICT Subjects at Satya Wacana Christian High School, Salatiga). *UKSW Repository* , 1.

Apriliyani, SW, & Mulyatna, F. (2021). E-LKPD Flipbook with an Ethnomathematics Approach to Pythagorean Theorem Material. *National Seminar on Science* , *2* (1), 491–500.

Atep, S., & Wahyu, S. (2020). *Tori's Innovative Learning Models and Implementation* . PT. Raja Grfindo Persada.

Bella, S., Azhar, A., & Nur, I. (2023). Development of Think-Pair-Share (Tps) Model Based Learning Tools for Global Warming Materials. *Journal of Education and Learning Research*, 20-29.

Deviana, M., Subekti, EE, & Kuswandari, K. (2021). Improving Science Learning Outcomes in Theme 9 Learning Through the Discovery Learning Model Assisted by Powerpoint Media for Class V Students of SDN 2 Responsibility. *Journal of Pedagogy* , *8* (3), 345.

Elpis. (2017). Using Image Media to Improve Social Studies Learning Outcomes for Class VI Students at SDN 010 Jaya Mukti. *Primary Journal Primary School Teacher Education Study Program, Faculty of Teacher Training and Education, Riau University* , *6* , 610–622.

farmer. (2021). Development of E-LKPD Using Live LKS for Online Mathematics Learning in the Covid-19 Period. *Journal of Mathematics Education* , *Vol. 6* , *No* , 37–42.

Fitriasari, DNM, & Yuliani, Y. (2021). Development of an Electronic Student Activity Sheet (E-LKPD) Based on Guided Discovery to Practice Integrated Science Process Skills in Class XII High School Photosynthesis Material. *Scientific Periodicals in Biology Education (BioEdu)* , *10* (3), 510–522

Hali, F., & Rawal, M. (2021). Development of E-LKPD Using Live LKS for Online Mathematics Learning in the Covid-19 Period. *J Mathematics Education.* , *6* , 36-42.

Hanum, H., Niah, S., & Pahmi, P. (2023). The Development of Podcast-Based-Audio Learning in Material Introducing Ourselves at 10th Grade SMA Muhammadiyah 1 Pekanbaru. *Journal of Education and Learning Research*, 37-46.

Kurniawan, D., Kuswandi, D., & Husna. (2018). Development of Learning Video Media in Science Subjects Concerning the Properties and Changes in Form of Objects for Class IV SDN Merjosari 5 Malang. *JINOTEP: Journal of Innovation and Learning Technology Studies and Research in Learning Technology* , *4 (2)* , 119-125.

Kurniawati, EE, Sumarti, SS, & Nuswowati, M. (2021). The Influence of Entrepreneurship-Oriented Project Based Learning assisted by E-LKPD on Science Process Skills and Entrepreneurial Attitudes. *Chemistry in Education* , *10* (2252), 315–321.

Novianti, FH (2014) *Development of Guided Inquiry-Based Practicum Student Activity Sheets (LKPD) for Class XI High Schools on Respiratory System Concepts* (Thesis, Jakarta: FITK UIN Syarif Hidayatullah Jakarta).

Prabu, SA (2015). Effectiveness of Scientific Based Learning on PGSD Students' Mastery of Science Process Skills. *Indonesian Journal of Science Education* , *4* (1), 15-19.

Prastowo, A. (2018). Transformation of the Primary and Secondary Education Curriculum in Indonesia. *Jip (PGMI Scientific Journal)* , *4* (2), 111-125.

Pratiwi, DE, & Yuliani. (2021). Development of e-LKPD oriented Learning Cycle 7E on Seed Germination Sub-material to Improve Science Process Skills. *Bioedu: Scientific Periodicals in Biology Education* , *10* (3), 541–553.

Safitri, W., Budiarso, AS, & Wahyuni, S. (2022). Development of E-Lkpd Based on Problem Based Learning to Improve Skills. *Science* , *24* (1), 30–41.

Riduan, R., & Sunarto, S. (2017). *Introduction to Statistics for Research: Education, Social, Communication, Economics and Business.* Alphabet. Bandung.

Risdyanti, D., Kuswandi, D., & Ulfa, S. (2019). Implementation of Science Learning in Implementing the 2013 Curriculum with the Semester Credit System (SKS) for Class VII SMP Negeri 3 Malang. *JKTP* , *2* (1).

Sadikin , A., & Hamidah, A. (2020). Online Learning in the Midst of the Covid-19 Pandemic. Scientific. *Journal of Biology Education* , 6(2), 109–119.

Sari, I., Nikmah, F., Rahayu, TI, & Utami, SPT (2018). The Feasibility of the Contents of the 2016 Revised Edition of the Indonesian Language Textbook for Class *DWIJA CENDEKIA: Journal of Pedagogical Research* , *2* (1), 24–31.

Sari, I. P., Sormin, R. K., Purba, A., Rahayu, A. P., & Khairas, E. E. (2023). Effectiveness of Flash Card Media To Improve Early Childhood English Letter and Vocabulary Recognition in Reading. *Journal of Education and Learning Research*, 1(1), 1-7.

Sugiyono , D. (2013). Educational Research Methods Quantitative , Qualitative and R&D Approaches.

Widiyanti , T., & Nisa, AF (2021). Development of E-LKPD Based on a Scientific Approach to Improve Student Learning Outcomes in Class V Elementary School Science Learning. *Trihayu : Journal of Elementary School Education* , *8* (1).

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